





MILLS COLLEGE
LIBRARY

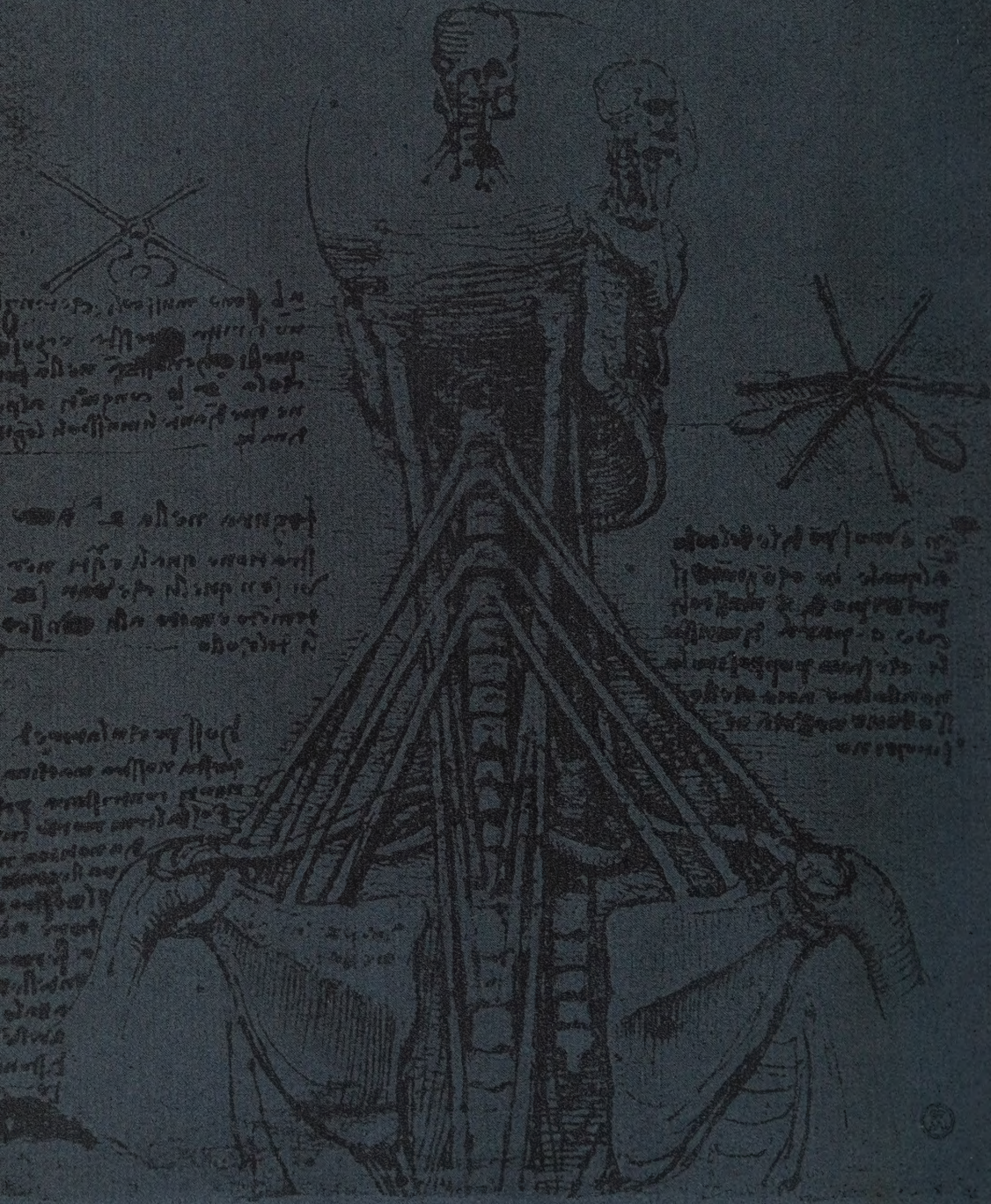
Gift of

~~Mr. W. C. Clark~~

~~APZ Department~~

Introduction to the method of
LEONARDO DA VINCI

Handwritten text in a script, likely from a historical medical manuscript, located at the top of the page.



Handwritten text in a script, likely from a historical medical manuscript, located on the left side of the page.

Handwritten text in a script, likely from a historical medical manuscript, located on the right side of the page.

Handwritten text in a script, likely from a historical medical manuscript, located at the bottom left of the page.

Introduction
to the method of
LEONARDO
DA VINCI

translated from the french of

PAUL VALÉRY

of the académie française

BY THOMAS MCGREEVY

MILLS
COLLEGE

Mills College Library
Withdrawn

LONDON · JOHN RODKER · 1929

21114
MILL
201100

PRINTED IN ENGLAND AT THE CURWEN PRESS

759.5
L581v

82090

TRANSLATOR'S ACKNOWLEDGEMENT

My friend, Mr. William MacCausland Stewart, M.A., my predecessor as Lecteur d'Anglais at the École Normale, now of St. Andrews University, whose knowledge of the French language and of the work of Monsieur Valéry are much more exhaustive than mine, has read through the first draft of my translation and made many suggestions which I have been glad to adopt.

T. McG.

École Normale Supérieure, Paris

February 1929

EDITION LIMITED TO 875 COPIES OF WHICH 50
SPECIALLY BOUND AND PRINTED ON HAND-MADE
PAPER AND SIGNED BY THE AUTHOR NUMBERED 1-50
THIS COPY IS NUMBER

CONTENTS

	<i>Page</i>
I. Note and Digression (1919)	I
II. Introduction (1894)	31

I

NOTE AND DIGRESSION

Why, people ask, did the author send his hero to Hungary? Because he wanted to introduce a piece of instrumental music the theme of which was Hungarian. He would have sent him to any other country as well had he found the slightest musical reason for doing so.

H. BERLIOZ. Foreword to *The Damnation of Faust*.

I ought first to apologize for a title which is not only pretentious, but positively deceptive. I did not mean it to be deceptive when I gave it to this little study. But that was twenty-five years ago. And now, chilled by twenty-five years, I find it too ambitious. Were I to re-write the work to-day I should moderate its pretensions. And as for the text! I should not dream of writing such a text to-day. *Impossible!* my reason would say. For at the *n*th move in the game of chess that knowledge plays with the mind, a player flatters himself that he has learned something from the adversary; that he can adopt its manner. So one becomes hard on the young man who was once oneself: whom, willy-nilly, one must accept as one's progenitor; hard on his inexplicable weaknesses—they seemed at the time audacities; on his ingenuosities, now so patent. Yet this is to become more imbecile than ever. But imbecile of necessity, for reasons of State. There is no temptation that stirs one so deeply, none more intimate, and also, perhaps, none more fruitful, than that of self-repudiation. Every day is jealous of every other day. It is its duty to be. Thought defends itself desperately against any suggestion that

it was once more vigorous. The illumination of the moment does not, if it can help it, extend to moments in the past that were brighter than itself. The first words that contact with the light causes the awakening intelligence to stammer sound from that Memnon as: *Nihil reputare actum*. . . .

To re-read them, to re-read having forgotten, without a shadow of sympathy, without a sense of one's own responsibility, coldly, with analytical penetration, with an expectation of finding oneself ridiculous and contemptible (in itself creative of ridicule and contempt), with a detached air, a destructive regard—this is to do one's work over again, or, rather, to feel that one would do it over again, very differently. To do it in this case would be worth the trouble. But it is still beyond my capacity. The more so as I have never definitely made up my mind to the effort. The little essay owes its existence to Madame Juliette Adam, who, towards the end of the year 1894, at the suggestion of Monsieur Léon Daudet, was kind enough to ask me to write for her *Nouvelle Revue*.

Although I was twenty-three I was extremely embarrassed. I was only too well aware that my understanding of Leonardo was much slighter than my admiration for him. I saw in him the leading character in that Intellectual Comedy which, so far, has not found its poet, and which, to my mind, would be so much more precious a thing than the *Comédie Humaine* or even the *Divina Commedia*. I felt that this master of his medium, this virtuoso in design, in iconography, in mathematics, had found that key-position from which explorations in the domain of knowledge and experiments in artistic creation are equally possible; at which fruitful exchanges between action and analysis are specially likely to occur.

It was a very exciting idea. But an idea that was too personal, of no practical use to me, absolutely unco-ordinated in

its application—an idea that might be utilized to good effect in conversation, but not in writing.

I was ravished to the heights of my being by this Apollo. What could be more alluring than a God who repudiates mystery, who does not erect his authority on the troubles of our nature, nor manifest his glories to what is most obscure, sentimental, sinister in us? who forces us to agree rather than to submit, whose mystery is self-elucidation, whose depth an admirably calculated perspective. Is there a better sign of authentic and legitimate power than that it does not operate from behind a veil? Never had Dionysos an enemy more decided, or one so pure or so armoured with light as this hero, who was less concerned to rend and destroy dragons than to examine the springs of their activity; disdainingly to riddle them with arrows when he could riddle them with questions: their superior rather than their vanquisher, he represents less an assured triumph over them than perfect comprehension of them—he understood them almost to the point of being able to reconstruct them; and once he had grasped the principle at work, he could leave them, having mockingly reduced them to the mere category of special cases and explained paradoxes.

Lightly as I had studied him, his drawings and his manuscripts had left me dazed. From these thousands of notes and sketches I gathered an impression of an unbelievable display of fireworks set free by the most diverse methods of striking on some fantastic anvil. There are maxims, recipes; advice to himself; trains of thought which will be taken up again and again; sometimes there is a fully elaborated description; sometimes he talks to himself familiarly. . . .

But I had no desire to say over again that he was this and that: painter, geometrician, and. . . .

And, in a word, *the* artist of the world. Everybody knew it.

4 INTRODUCTION TO THE METHOD

I was not learned enough to think of working out the details of his discoveries—to try, for instance, to determine the precise meaning of the *Impeto* which he utilized to such a degree in his dynamics; or to give a dissertation on the *Sfumato* which he strove to realize in his painting. Nor did I believe myself sufficiently erudite (still less, ready to be) to think of contributing even the little that I might to the mere accumulation of facts already established. I did not find in myself the fervent passion for erudition that I should have. The astonishing conversation of Marcel Schwob won me to the unique charm rather than to its sources. I drank as long as there was drink. I had the pleasure and not the pain. But in the end I came back to myself; my indolence asserted itself against the idea of dispiriting readings, interminable tests; against those doubting methods which keep us from the truth. I said to my friend that the learned run far more risks than the unlearned, that they give hostages to fortune while we remain unimplicated, that there are two ways of deceiving oneself, ours, which is easy and theirs, which is laborious; that if they have the good fortune to produce results, the very number of material facts established puts in danger the reality for which they are searching. The truth of material fact is more false than falsehood's self. Documents give us information at random on both the rule and the exception. Even a chronicler prefers to hand down the odd occurrences of his epoch. But the sum of things that are true of an epoch or of a personage does not always help us to understand it better. Nothing is identical with the exact total of its appearances, and which of us has not said, which of us not done, something which is not characteristic? Now an imitative gesture, now a slip of the tongue, some chance, or the very accumulated weariness of being so precisely one's own self, and precisely that self is, for a moment, changed; if somebody

makes a sketch of one at a dinner-table and that sketch goes down to posterity—so many members of which will be erudite men—there one is, a pretty figure for all critical eternity! If some one making a face is photographed at that moment, there also is an irrefutable document; but show it to the friends of the photographed person and they won't recognize him in it.

I had many other sophistries at the disposition of my dislikes. Repugnance to protracted work is so very ingenious. Yet all the time I should, perhaps, have conquered my laziness if I had been able to see that I could thus attain the end I longed for. In the depths of myself I loved the intimate law of this great Leonardo. I was not concerned with his history nor with the mere products of his thought. Before that head, weighted with so many crowns, I dreamed only of the *kernel*. . . .

What was there for me to do, amidst all these denials, being rich only in desires, as drunk as one can be with intellectual cupidity and arrogance?

Hold my head up? Contract at last some literary fever? and foment its delirium.

I burned for a beautiful subject. How little that is when you have the writing materials in front of you!

A great thirst doubtlessly creates for itself visions of running streams; it acts on one does not know what secret substances, like the invisible light on Bohemian glass that is penetrated with oxide of uranium; it projects light on to what it is hoping for, makes the pitcher seem to glisten, paints for itself the opalescence of a carafe. . . . But the beverages which it gives to itself are illusions. I thought it unworthy, and I still think it unworthy, to write solely out of enthusiasm. Enthusiasm is not the writer's state of mind.

6 INTRODUCTION TO THE METHOD

However powerful the passion may be it only becomes active and useful when it is utilized upon a subject where art can direct it. There must be well-placed checks to prevent it from being dissipated, and a delay must be adroitly imposed on the invincible movement back to equilibrium so that something may be abstracted before the ardour diminishes.

An author preparing a discourse, and meditating on it beforehand, feels himself at once *source*, *engineer* and *constraining influence*. One part of him is the impulse; another foresees, arranges, suppresses; another, remembering and deductive, keeps an eye on the material, preserves the harmonies, makes sure of the permanence of the *calculated* design. Since *to write* should be to be, to construct, as solidly and as precisely as one possibly can, the machine of language in which the released activity of the spirit spends itself in conquering an opposed reality, a writer must become detached from himself. It is only and strictly when detachment is achieved that the whole man becomes *author*. Everything else is merely part of a part of him, escaped, it is not part of *himself*. Between the emotion or the initial intention and those final forgetfulnesses, disorders, vaguenesses which are inevitable results of thought, his business is to introduce the contrarinesses that he has created, so that, interposed, they shall set some regenerating action and independent existence against the transient nature of interior phenomena.

I perhaps exaggerated in those days the obvious defect of all literature, its inability ever to satisfy the whole spirit. I did not like the idea that one leaves some functions unexercised while setting others in motion. I can say, too—it is to say the same thing—that I put nothing above *consciousness*. I would have given many masterpieces that I believed undeliberated for one evidently fully considered page.

These mistakes, which it would be easy enough to defend, and which are still not so unfruitful that I do not sometimes return to them, frustrated my efforts. All my principles were too immediate and too definite, but also too universal to be of any use to me in a particular set of circumstances. It requires many years for the truths that one has discovered for oneself to become flesh of one's flesh.

And so, instead of finding in myself those conditions, those obstacles that are comparable to exterior forces, and that allow one to advance against one's primary impulses, I came up against evilly disposed chicaneries, and I took pleasure in making things seem more difficult than they should have seemed to such young eyes. As an alternative I saw nothing but things half-realized, mere possibilities and disgusting facility: a purely instinctive potentiality, as useless as that of dreams, stirring up and mixing again an infinity of clichés.

If I threw verbal dice on a paper I only turned up the words that signify intellectual impotence: *genius*, *mystery*, *depth* . . . terms signifying nothing, throwing less light on the subject than on the person discussing it. It was in vain that I tried to delude myself. That mental strategy was short-lived. I countered my budding propositions so promptly, with such pitiless judgement, that the sum of my interchanges at any moment was nothing.

For a crown to my misfortune I worshipped, confusedly but passionately, precision. I was always trying vaguely to direct my own thought.

I felt, to be sure, that we must of necessity take the question of chance into account; the mind, made in order to deal with the unforeseen, gives chances and takes them. The things it expects produce no direct effect, and its voluntary and regular operations are only of use *afterwards*—as in a second existence

8 INTRODUCTION TO THE METHOD

given to what is clearest in mind itself. But I did not believe in the power attributed to delirium, in the necessity for ignorance, in illumination from absurdity, in creative incoherence. What we take from chance retains always something of its parentage. Our revelations are only happenings of a certain kind, and it is still necessary to interpret events which occur in the *domain of knowledge*. It is always necessary. Even the happiest of our intuitions are results that are inexact: through *excess* as compared with our normal understanding, through *deficiency* when considered in relation to the infinity of lesser things and particular cases which they seem to bring within our grasp. Our personal merit—which is what we strive after—consists less in submitting to them than in seizing them, and in seizing them less than in sifting them. Sometimes the thrust of one's dæmon is less important than one's method of parrying it.

Besides, we know only too well that probabilities are against the dæmon; for one fine idea that it leaves to us it shamelessly suggests a million that are merely stupid; and even the one becomes of value in the end only through our treatment of it. As ores which cannot be judged in their beds and seams find their value when brought into the light and when worked upon in the light.

The intuitive element, then, is far from giving their quality to works of art. Take away the artist's work and your intuition is no more than a spiritual accident, lost amongst the statistics of the local life of the brain. Its true value does not arise from the mystery of its origin, nor from the supposed depths out of which we like to think it has emerged, nor even from the delighted surprise it causes in ourselves; but because it meets our wants and, in short, because of the considered use to which we can put it, because, that is to say, of its utility to the whole personality.

But if it be understood that it is with our greatest intuitions that we run the greatest risk of going wrong, and that the norm of our thought is of little significance, then that in us which chooses, that which constructs anew, has to work without ceasing. That which is beyond, which depends on no one—it is as useless to call on that as to call down rain. We baptize it, deify it, torment it—in vain! The only result is further falsity and deception—things so naturally bound up with intellectual ambition that one may wonder whether they are not its principle rather than its products. The folly of mistaking a paradox for a discovery, a metaphor for a proof, a torrent of verbiage for a spring of capital truths, and oneself for an oracle, is inborn in us.

Leonardo da Vinci has nothing to do with these disorders. Amongst the many idols from which we may choose—since we have to adore at least one—he set up before his eyes that Obstinate Rigour which is avowedly the most exigent of any. It must be the least gross of them all, since they are all united in hating it.

Once rigour is established a positive liberty becomes possible. Apparent liberty being no more than a liberty to surrender to every chance impulse: the more we enjoy it the more we are slaves to the one element—like a cork on the sea which is held by nothing, drawn by everything, and about which all the powers of the universe contend and annihilate themselves.

The whole method of the great da Vinci derives simply from the greatness of its object. As though it had nothing to do with an individual man, his thought seems more universal, more meticulous, more developed, more isolated than personal thought. The most exalted figure is never 'an original'. With him what is merely personal becomes as insignificant as possible. No unevennesses; no intellectual superstitions. No

unnecessary terrors. No fear of analysis—he carries analysis—or it carries him—to its farthest conclusions; and he comes back to reality without effort. He imitates, innovates; he does not reject the old because it is old; nor the new because it is new; he studies in both something that is eternally of the present.

He is not in the least degree cognizant of that so crude and so ill-defined opposition which, three half-centuries after him, was to be proclaimed between wit and geometrical genius by a man entirely insensitive to art, who was incapable of imagining so delicate and natural a co-ordination of distinct qualities; who considered that painting is vanity and that true eloquence despises eloquence; who launched us on a quest where all insight and all geometry are suppressed; and who, having changed his new lamp for an old one, gave himself up to sewing prayers into his clothes when he should have been giving to France the glory of finding a calculus of the infinite. . . .

But no revelations for Leonardo. No abyss yawns at his feet—an abyss would make him think of a bridge, an abyss could be used for experiments with some great mechanical bird. Himself he could regard as an ideal realization of the beautiful and intelligent animal, absolutely supple and free; capable of many methods of progression; knowing, on the slightest indication from its rider, without difficulty or delay, how to change from one method to any other. Spirit of wit or spirit of geometry, one identifies oneself with it, or one abandons it, as the clever horse changes from this rhythm to that. The supremely co-ordinated being needs only to prescribe to himself certain secret and very simple modifications with regard to will, and immediately he passes from an order where changes are purely formal and acts purely symbolical to a world of imperfect knowledge and undisciplined reality. To possess this

liberty in profound change, to be able to utilize this machinery of adjustment, is merely to possess such a sense of human integrity as we imagine the ancients possessed.

A superior elegance is disconcerting. The absence of embarrassment, of a prophetic air or a pathetic; these precise ideals; this temperament in which the balance between curiosity and potentiality is always being re-established by a master of equilibrium; this disdain of hocus-pocus and artifice, and, in the most inventive of men, this absence of a sense of the theatre—these we find scandalous. What could be harder to conceive for people such as we, who make a sort of business of ‘sensibility’, who claim to possess everything in a few elementary effects of contrast and nervous repercussion and to grasp everything when we succeed in giving ourselves the illusion of identity with the transient iridescent material of our life here?

But Leonardo, proceeding from research to research, attains quite simply to a steadily more perfect mastery over his own nature; unceasingly he modifies his ideas, unceasingly looks closer; unceasingly elaborates his notes; he teaches one hand as well as the other to draw with the most absolute precision; he takes himself to pieces and puts himself together again, establishes a closer correspondence between will and potentiality, brings reason into the arts yet retains his grace.

So detached an intelligence is bound to arrive at curious attitudes in the course of its movement—as a ballerina will astonish us by achieving and sustaining for several moments poses of utter instability. His detachment is a shock to our instincts and a mockery of our preconceived ideas. Nothing could be more free, that is to say nothing could be less human, than his judgements on love, on death. We may divine them from a few fragments in the notebooks. ‘Love in its fury’, he

says in effect, 'is a thing so ugly that the human race would die out— *la natura si perderebbe*—if those engaged in it were to see themselves.' This contempt is indicated in different sketches. The height of contempt for certain things is, after all, to examine them at one's leisure. Here and there he makes sketches of anatomical unions, frightful cross-sections of love's very act. The erotic machine interests him, animal mechanism being his chosen territory; but a struggle of sweats, the panting of the *opranti*, become one monster of opposed muscularities, a bestial transfiguration, all that seems to arouse in him only aversion and disdain. . . .

His judgement on death has to be gathered from a note that is short enough, but of an antique fullness and simplicity, and which was, perhaps, intended for inclusion in the preamble to a treatise on the human body that was never finished.

This man, who has dissected ten corpses in order to trace the course of certain veins, opines that the organization of our body is such a marvel that the soul, although a *thing divine*, only separates itself with the greatest suffering from the body that it has inhabited. '*And I can well believe*', says Leonardo, '*that its tears and its grief are not without justification. . . .*'

Let us not try to fathom the meaning of the doubt, so pregnant with meaning, that is implied in these words. Suffice it to regard the vast shadow cast by some idea in process of formation; death interpreted as a disaster *for the soul!* the death of the body as a diminution of this *thing divine*. Death wounding the soul to tears, wounding it in its dearest achievement, destroying the edifice which it had raised as a habitation for itself.

I am not trying to deduce a system of metaphysic according to Leonardo from these reticent words; but since it has formed itself in my thought I shall allow myself a comparison. It is a

facile comparison enough. For a student of organisms such as he, the body is not a piece of rubbish to be utterly despised. It has too many properties, it solves too many problems. *It possesses too many functions, is capable of too many resources, not to correspond to some transcendental necessity that is sufficiently powerful to construct it, but not sufficiently powerful to be able to dispense with its complexities.* It is the creation of some one who has need of it, who does not willingly cast it aside, who laments its loss as one laments the loss of power. . . . Such is the feeling of da Vinci. His philosophy is wholly *naturalistic*, markedly opposed to the purely *spiritual*, very much given to word-for-word physico-mechanical explanations. When the subject is the soul, observe how very close he is to the philosophy of the Church. The Church, at least in so far as the Church is Thomist, does not allow to the separated soul a very enviable existence. Nothing is poorer than this soul when it has lost its body. It has little more than bare existence, the logical minimum, a sort of latent life in which it is, for us, and no doubt for itself, unimaginable. It has put away everything, power, will, perhaps knowledge. We do not even know whether it can remember that it was, in time and in some place, the *form* and the *deed* of its body. Remains to it the glory of its autonomy. So vain and so insipid a condition is happily only transitory—if the word, used of a state beyond time, retains any meaning. Reason demands, and dogma imposes, the restoration of the flesh. No doubt the qualities of this last flesh will be quite different from those possessed by our flesh. Here, I think, one must imagine something other than a simple reversal of Carnot's principle, than a mere realization of the *improbable*. But it is useless to venture to such extremes in physics, to dream of a glorious body, the substance of which would be in a different relation from our own to the law of

attraction in all things, and so changed in relation to the speed of light that the *swiftness* predicted for it would be realized. However it be, the naked soul must, according to theology, recover, in a certain body, a certain functional life and, through that new body, some species of matter that allows of its activities, and fills its unoccupied intellectual divisions with incorruptible wonders.

A dogma which concedes this not exactly secondary importance to bodily organization, which, to a remarkable degree, minimizes the soul, which forbids us, and spares us, the folly of trying to imagine what it is like, which goes so far as to insist on its re-incarnation in order that it may participate in eternal life, this dogma, so exactly contrary to the exclusively spiritual, separates the Church in the most striking manner from the generality of other Christian confessions. But it seems to me that for two or three centuries no article of faith has been passed over so lightly in religious literature. Preachers and apologists scarcely refer to it. . . . The reason for this semi-silence is unknown to me.

I have wandered so far into Leonardo that I do not know for the moment how to get back to myself. What matter! Every road leads back to oneself—that is the definition of the self—it cannot lose itself absolutely, it loses only time.

Let us, then, follow a little farther the bent and the temptations of the mind. Unfortunately, we may follow them without fear: following them leads to no real depth. Even our most profound thought is limited by the invincible circumstances which make all thought superficial. One only enters a forest of transpositions, or, rather, a palace walled with mirrors which multiply to infinity the light of a solitary lamp.

But let us try again whether our unaided curiosity can throw any light on the secret method of some individual who is of

primary importance for us. And let us imagine how, more or less, he must appear to himself when, sometimes in the course of his work, he stops and considers himself as a whole. First he sees himself as bound by common necessities and realities; afterwards he reconstructs himself in the secrecy of his separate knowledge. He sees like us and he sees like himself. He has a theory of his nature and a sense of his craft. He is absent and present. He sustains that kind of dual role that a priest has to sustain. He sees clearly enough that he cannot define himself to himself altogether in terms of ordinary happenings and ordinary motives. *To live*, even to live well, that is for him only a means: when he eats, he nourishes some other marvel than his life, and the half of his bread is consecrate. *To act*, it is for him only an exercise. *To love*, I wonder whether it is possible to him. And as for glory—no! To shine in the eyes of others is to shine with the brightness of false gems.

Nevertheless he must find in himself some landmarks so placed as to bring his private life and this *generalized life* which he has discovered in himself into harmony with each other. The calm clairvoyance that seems, though not absolutely convincingly, to make him quite clear to himself would wish to escape that relativity which it cannot but recognize in everything else. In vain it transforms itself, in vain from day to day it reproduces itself as clear as the sun. The sense of identity with its successive transformations always carries with it a sense of falseness. It knows in its unchangeableness that it is subject to another mysterious law and to modifications that are not apparent; and knows, therefore, that it includes always, even when it is at the very clearest stage of its lucidity, a hidden possibility of weakness and of utter ruin—as the dream that seems most real will suddenly include an element of inexplicable unreality.

It is a kind of clairvoyant agony to feel that though one sees everything, one remains, oneself, *visible*, possibly even the object of outside attention; that one cannot find a place, a viewpoint which has nothing behind it.

Durus est hic sermo, the reader will say. But in these matters what is not vague is difficult, what is not difficult is nothing. Let us go on a little farther.

For so self-conscious a presence of mind, which makes a detour round the universe to come back to itself, all events of all kinds, life and death and ideas, are subordinated *symbols*. As each *visible thing* is to *what sees it*, at once alien, indispensable and inferior, so the importance of these symbols, however great it may at any given moment seem, lessens on reflection before the mere persistence of attention itself and is transferred to that pure universality, to that unconquerable capacity for generalization which consciousness feels itself to be.

Such events as have the power to suppress consciousness are, by the same law, robbed of all significance; when they conserve it they become part of its system. Intelligence knows nothing of having been born as it knows nothing of dying. It is enlightened, certainly, as to its fluctuations and its ultimate disappearance, but merely through a notion that is no different to all other notions. It might very easily believe that it will survive and that it will not change, were it not that it recognizes from its experiences day after day the existence of many fatal possibilities; and of one certain slope that leads to the lowest depths of all. This slope causes a presentiment of a power that may become irresistible, announces the beginning of permanent exile from the spiritual sun, from the maximum of clarity and solidity, from the power to distinguish and choose; who descends the slope has a sense of it, obscured by a thousand psychological impurities, beset by echoings and

dizzinesses across the confusion of times and disorders of the functions; one goes on feebly through an indescribable derangement of the dimensions of knowledge until one reaches the state of immediacy and unity in which chaos disappears before the nothingness of death.

But the more a complete system of psychological substitutions opposed to death as well as to life becomes self-conscious, replacing itself by itself, the more it becomes detached from all beginnings, the more it eliminates, in a sense, all risk of disintegration. Comparable to a ring of smoke, a system of altogether interior energies astonishingly lays claim to perfect independence and indivisibility. In a very clear consciousness, memory and phenomena find themselves so closely related, so taken for granted, so responded to; the old is so much utilized; the new so promptly appreciated; and the value of total relationships so clearly re-established, that it seems as though in this realm of almost pure activity nothing can begin and nothing end. The perpetual change in *things* which constitutes activity assures to it an appearance of indefinite conservation. It is not attached to any of them. And it contains no *borderline element*, no singular object of perception or of thought so much more real than all the others that it could not be replaced by some one of them. Within it there is no idea which fulfils the unknown conditions of consciousness to the point of making consciousness disappear, no thought which can destroy the power of thought and bring it to an end—there is no point in the turn of the key at which the lock sets for ever. There is no thought which can be for thought, inevitably, as a result of its own development, an end; a final resolving of that permanent disharmony.

Since mind has found no limit to its activity, and since no idea marks the end of the business of consciousness, it must

18 INTRODUCTION TO THE METHOD

most likely perish in some incomprehensible climax foreshadowed and prepared by those terrors and odd sensations of which I have spoken; they give us glimpses of worlds that are unstable and incompatible with fullness of life: inhuman worlds, feeble worlds, worlds comparable to those that the mathematician calls forth when he plays with axioms, the physicist when he postulates *constants*, other than those admitted. Between the clarity of life and the simplicity of death, dreams, anxieties, ecstasies, all the semi-impossible states which introduce what one might call approximate values and transcendental or irrational solutions into the equation of knowledge, all these form curious stages, variations, phases that it is beyond words to describe—for there are no names for those things amongst which one is completely alone.

As the elusive art of music unites the liberties of sleep with the development and consistency of extreme attention and makes a synthesis of intimate things which last only a moment, so the fluctuations of the psychic equilibrium give one a glimpse of deviating modes of existence. We have in us forms of sensibility which, though they may be born, may not develop. They are instants snatched from the implacable criticism of the passage of time; they cannot survive if our being is to function fully: either we perish or they disperse. But they are monsters full of lessons for us, these monsters of the intelligence, these transitory stages, these spaces in which the continuity, the relation, the mobility we know, are altered; empires in which illumination is associated with sorrow; power-houses where the orientation of fears and desires sends us on strange circuits; matter which consists of time; abysses literally of horror or love or quietude; regions curiously attached to themselves; non-archimedean realms

which defy movement; perpetuities in a flash of lightning; surfaces that shape themselves to our nausea, bend under our lightest decisions. . . . One cannot say that they are real; one cannot say that they are not real. Who has not experience of them does not know the value of natural intelligence and of even the most ordinary environment; he does not understand the true fragility of the world—which has no relation to so simple a thing as our alternative of being or not being. The wonder is not that things should be; it is that they should be such things and not such other things. *The image of this world* is part of a family of images, an infinite group, all the elements of which we possess—but unconsciously—consciousness of possession is the secret of the inventors.

The consciousness as it emerges from these gaps, these personal deviations in which weakness and the presence of poisons in the nervous system, but also the power as well as the subtlety of the attention and a most exquisite logic, a cultivated mysticism, all, severally, direct it, the consciousness, then, comes to suspect all accustomed reality of being only one solution amongst many others of universal problems. It tells itself that things could be somewhat different from what they are without its being very different from itself. It dares to consider its body and its world as almost arbitrary restrictions imposed on the range of its functions. It sees itself as corresponding, or as responding, not to a world, but to some system of a higher order the elements of which may themselves be worlds. It is capable of more interior combinations than are necessary for living; of more rigour than any occasion in life would need or tolerate; it judges itself deeper than the abyss of physical life and death. And this attitude to its own position cannot react back on itself, so far is it withdrawn, placed beyond all things, so much has it applied itself to the

task of *never figuring in anything that it might imagine or agree to*. It has become no more than a dark body which absorbs everything and gives out nothing.

Drawing from these exact observations and from these inevitable pretensions a dangerous boldness; strong in this type of independence and unchangingness that it has to admit it possesses, it postulates itself in the end as the direct heir and image of that being that has no form, no origin, on which devolves, to which is related, the whole effort of the cosmos. A little more and it will admit as necessary existences only two entities, both of them essentially unknown: itself and *X*; both of them abstracted from everything, implicated in everything, implicating everything; equal and consubstantial.

The man who has been led by a mind that works tirelessly to this contact with living shadows, to this point of pure being, sees himself naked and destitute, reduced to the supreme poverty of power without a purpose, victim, masterpiece, perfection of simplification and of dialectic order; his state comparable to that reached by the richest mind when it has become assimilated to itself, when it has recognized itself and consummated itself in a little group of characters and symbols. The work which we devote to the object of our reflections he has expended on the subject which reflects.

Here he is, then, deprived of instincts, almost deprived of images; and he no longer has a purpose. He has no fellows. (I say *he* and I say *man* by analogy and for lack of words.)

He is no longer concerned to choose or to create, to maintain or to develop himself. There is nothing to conquer. There cannot even be question of destroying himself. 'Genius' is now entirely consumed, cannot be used to any further purpose. It was no more than a means to attain to the last simplicity. There is no act of genius which would not be *less* than the act

of being. An imbecile is created and informed by a magnificent law; the most powerful mind finds nothing better than itself.

To sum up, being constrained to define itself by the sum of things and excess of knowledge over the sum of things, this perfected consciousness, which, to establish itself, has to begin by denying an infinite number of faiths, an infinite number of elements, and by exhausting the objects of its force without exhausting the force itself, this perfected consciousness differs as little as could be wished from nothingness. It reminds one absurdly of an audience invisible in the darkness of a theatre which cannot see itself, which can see only the spectacle before it, and which, yet, all the time, invincibly feels itself the centre of a breathlessly interesting evening. It is complete, impenetrable, absolute night; but filled with things, eager, secretly organized, made up of organisms which limit and compress themselves; a compact night, its shadows packed with organisms which live, breathe, warm themselves and which defend, each according to its nature, their places and functions. Before this intense, mysterious assembly, are all the things of sensibility, intelligibility, possibility, glittering and moving in an enclosed framework. Nothing can be born, die, or exist in any degree, or have time, place, form or meaning, except on this stage which the fates have circumscribed, and having separated which, from nobody knows what primordial confusion, as on the first day darkness was separated from light, they have opposed and subordinated to the condition of *being seen*. . . .

If I have brought the reader to this solitude and to this desperate clarity, it is because it was very necessary to carry the idea that I have formed of intellectual power to its ultimate consequences. The human characteristic is consciousness; the

characteristic of consciousness is a process of perpetual exhaustion, of detachment without rest or exclusion from everything that comes before it, whatever that thing may be—an inexhaustible activity, independent of the quality as of the quantity of the things which appear and by means of which the man of intellect must at last bring himself deliberately to an unqualified refusal to be anything whatsoever.

All phenomena being thus regarded with a sort of equal repulsion and as rejected successively by an identical gesture, appear to be, in a certain sense, equivalent to each other. Feelings and thoughts are included in the uniform condemnation extended to all that can be perceived. It must be quite understood that nothing is exempted from the rigour of this exhaustion, that our attention should suffice to put our most intimate feelings on the same plane as exterior objects and events; from the moment that they become observable they go to join the rest of observed things.

Colour, grief, memories; surprises and things expected; the tree outside, the rustling of its leaves, its yearly change, its shadow as well as its substance, its accidents of shape and position, the far-off thoughts that it brings back to my wandering attention—*all these things are equal*. . . . All things are replaceable by all things—may not this be the definition of *things*?

It is impossible that the activity of the mind should not in the end force it to this ultimate, elementary consideration. Its multiplied movements, its intimate struggles, its perturbations, its analytic returns on itself—do these leave anything unchanged? Is there anything that resists the lure of the senses, the dissipation of ideas, the fading of memories, the slow variation of the organism, the incessant and multiform activity of the universe? There is only this consciousness, and this consciousness only at its most abstract.

Our *personality* itself, which, stupidly, we take to be our most intimate and deepest *possession*, our sovereign good, is only a thing, and mutable and accidental in comparison with this other most naked ego; since we can think about it, calculate its interests, even lose sight of them a little, it is therefore no more than a secondary psychological divinity that lives in our looking-glass and answers to our name. It belongs to the order of Penates. It is subject to pain, greedy for incense like false gods; and, like them, it is food for worms. It expands when praised. It does not resist the power of wine, the charm of words, the sorcery of music. It admires itself, and through self-admiration becomes docile and easily led. It is lost in the masquerade and yields itself strangely to the anamorphosis of sleep. And further, it is painfully obliged to recognize that it has equals, to admit that it is *inferior* to some—a bitter and inexplicable experience for it, this.

Besides, everything convinces it that it is a mere phenomenon; that it must figure with all the accidental facts of the world amongst statistics and tables; that it had its beginning in a seminal chance, a microscopic incident; that it has run thousands of millions of risks; that it has been shaped by a number of happenings and that, however much it may be admirable, free, acknowledged, brilliant, it is, in sum, the effect of an incalculable disorder.

Each person being a sport of nature, a *jeu de l'amour et du hasard*, the most beautiful purpose and even the most learned thought of this re-created creature inevitably recall his origin. His activities are always relative, his masterpieces are fortuitous. He thinks mortally, individually, by fits and starts; and he finds the best of his ideas in casual and secret circumstances which he refrains from making public. Besides, he is not sure of being positively *some one*, he disguises and denies,

more easily than he affirms, himself. Drawing from his own inconsistency some strength and much vanity, he puts his most cherished moments into fictions. He lives by romance, sees himself in a thousand roles. . . . His hero is never himself. . . .

And finally he passes nine-tenths of his time in what has yet to happen, in that which no longer is, in what cannot possibly be; to such an extent that our true *present* has nine chances out of ten of never being.

But all the time each private life possesses, deep down as a treasure, the fundamental permanence of consciousness which depends on nothing. And as the ear catches and loses and catches again, and loses again through all the varying movement of a symphony some grave and persistent *motif* which ceases to be heard from moment to moment, but which never ceases to be there—so the pure *ego*, the unique and continuous element in each being in the world, rediscovering itself and then losing itself again, inhabits our intelligence eternally; this deep *note* of existence itself dominates the whole complication of circumstance and change in existence from the moment that it is heard.

Is it not the chief and secret achievement of the greatest mind to isolate this substantial permanence from the strife of everyday truths? Is it not essential that in spite of everything he shall arrive at self-definition by means of this pure relationship, changeless amongst the most diverse objects, which will give him an almost inconceivable universality, give him, in a sense, the power of a corresponding universe? It is not his cherished self that he elevates to so high a degree, since by thinking about it he has renounced it, and has substituted for it in the place of subject this *ego* which is unqualified, which has no name, no history, which is no more sensitive, no less

real than the centre of gravity of a planetary system or ring, but which is a result of the whole—whatever that whole may be. . . .

A moment since, and the obvious purpose of this wonderful intellectual life was still to astonish itself. Its preoccupation was to produce offspring that it could admire; it limited itself to what is most beautiful, most sweet, most bright, most substantial; and it was untroubled—save for its resemblance to other existing organisms, the strangest problem that one can propound to oneself; which is put to us by the existence of those who resemble us, and which consists simply in the possible existence of other intelligences, in the plurality of the singular, in the contradictory coexistence of lives independent amongst themselves—*tot capita, tot tempora*—a problem comparable to the physical problems of *relativity* but infinitely more difficult.

But now, carried away by his anxiety to be unique and guided by his ardour for omnipotence, this same being has passed beyond all creations, all works, beyond even his greatest designs at the same time that he has put away from him all tenderness for himself and all preference for his own desires. He immolates, in one instant, his individuality. He feels himself pure consciousness; and two of that cannot exist. He is the *I*, the pronoun of universality, the name of *that* which has no relation to appearance. Oh, to what a point has pride been transformed! How it has arrived at a position that it did not even know it was seeking! How temperate the reward of its triumphs! A life so firmly directed, and which has treated as obstacles to be avoided or to be mastered all the objects it could propose to itself, must, after all, have attained an unassailable end, not an end to its duration, but an end within itself. Its pride has brought it as far as this. And

c

here its pride is consumed. Pride, which conducted it, leaves it, astonished, naked, infinitely simple at the pole of its treasures.

These thoughts are not mysterious. One might say quite abstractly that the most general group of our transformations, which includes all sensations, all ideas, all judgements, everything that manifests itself *intus et extra*, admits of an *invariable*.

I have let myself transgress the bounds of all patience and all clarity. I have succumbed to the ideas that came to me while I was writing of the task I undertook long ago. I shall finish the somewhat simplified picture of the state I was in in a few words: there are a few moments more to spend in 1894.

There is nothing so curious as lucidity at odds with insufficiency. Here, more or less, is what happens, what was destined to happen, and what did happen, to me.

I was placed in the position of having to invent a character capable of many activities. I suffered from the mania of caring only for the functioning of beings. In the matter of works of art I cared only for their genesis. I knew that these works are always falsifications, arrangements, the creator, fortunately, never being the man. The life of the former is not the life of the latter: collect all the facts that can be collected about the life of Racine and you will never learn from them the art of his verse. All criticism is dominated by the outworn theory that the man is the cause of the work as in the eyes of the law the criminal is the *cause* of the crime. Far rather are they both the effects. But the pragmatic principle lightens the task of the judge and the critic. Biography is simpler than analysis. But of what interests us most it teaches absolutely nothing. . . . And further! The true life of a man, always ill-defined for his

neighbour, even for himself, can be only utilized in an explanation of his works, indirectly and by means of very careful elaboration.

Therefore, no mistresses, no creditors, no anecdotes, no adventures! One is brought to the most honest system, which is to exclude all these exterior details and to imagine a theoretic being, a psychological model, more or less approximate, but still representing in a manner one's own capacity to re-create the work that one proposes to explain. Success is doubtful, but the work is not thankless: if it does not solve the insoluble problems of intellectual parthenogenesis, at least it *states* them with otherwise unattainable clarity.

This conviction was my one definite asset in the circumstances.

The necessity in which I was placed, the void I had so well created by rejecting solutions antipathetic to my nature, the erudition disdained, the resources of rhetoric scorned, everything conspired to put me into a state of despair. In the end—I confess it—I found nothing better to do than to attribute my own agitation to the unfortunate Leonardo, transmitting the disorder of my mind to the complexity of his. I attributed all my desires to him as things he had known. I postulated as things that he had encountered and resolved, many difficulties which haunted me in those days. I substituted his supposed power for my own weakness. I dared to discuss myself using his name and his character.

It was deceitful, but it was reality. A young man, curious about a thousand things—must he not, after all, resemble to some extent a man of the Renaissance? His simplicity even, does it not represent a kind of relative simplicity *created* by four centuries of discoveries that tend to the detriment of the men of that time? And then, I thought, Hercules had not more

muscles than we, they were only larger muscles. I cannot even move the rock which he carried away, but our machineries are not different in construction; I correspond to him, bone by bone, fibre by fibre, act by act, and our likeness permits me to imagine his labours.

A little reflection makes one realize that there is no other course that one can follow. We must put ourselves deliberately in the place of the being we are concerned with. . . . And who else but oneself can respond when one calls up a spirit? One never finds it except in oneself. It is our own activity alone which can teach us anything about anything. To my mind, our knowledge has for its limits the consciousness that we can possess of our own being—and, perhaps, of *our bodies*. Whatever *X* may be, the idea that I have of it, if pressed, brings me to myself, whatever I am. One may not know it, or one may know it, one may submit to it, one may desire it, but there is no point where one can escape from it, no other issue. The *purpose* of every thought is in us. It is from our own substance that we imagine and that we make a stone, a plant, a movement, an *object*; no image whatever is more, perhaps, than a beginning of ourselves. . . .

lionardo mio
o lionardo che tanto penate. . . .

As for the true Leonardo, he was what he was. . . . Always this myth, stranger than all others, gains infinitely by being removed back from fable into history. The farther one proceeds the greater precisely he grows. The experiments of Ader and of the Wrights have given a radiance of retrospective glory to his *Treatise on the Flight of Birds*; the germ of the theories of Fresnel is to be found in certain passages of the manuscripts at the Institute of France. During these last years

the researches of the regretted M. Duhem on the *Origins of Statics* have made it possible to attribute to Leonardo the fundamental theorem of the composition of forces and a very clear, though incomplete, notion of the principle of virtual work.

II

INTRODUCTION

To Marcel Schwob

There remain of a man those things of which one is set dreaming by his name and by the works which make of his name a mark of admiration, of hate, or of indifference. Remembering that he was a thinker, we are able to discover in his works ideas which really originate in ourselves: we can re-create his thought in the image of our own. An ordinary man we represent to ourselves with ease: we can reconstruct his elementary actions and reactions from our own simple experience. We find the same processes in the indifferent acts that constitute the exterior aspect of his life as in our own; we are the connecting link between our acts, as he was between his, and the radius of activity that his existence suggests to us does not extend farther than the radius of our own. But if we allow that this individual excels in some respect we shall have more difficulty in imagining to ourselves the works and the ways of his mind. In order not to be confused in our admiration we shall be forced to stretch our imaginative perception of the quality that dominates in him and of which we no doubt possess only the germ. But if all the faculties of his mind are widely developed at the same time, or if the results of his activity seem to be considerable in all fields, his character becomes thereby more and more difficult to comprehend in its unity, tends to escape from our efforts to understand it. There are distances from one extremity to another of this intellectual area such as we have never covered. The continuity of the whole escapes our perception as do formless

scraps of space which are divided from each other by objects that we know and which are for us no more than chance intervals; as, at each instant, myriads of facts, over and above the small number established by language, are lost. Nevertheless we must go slowly, take time before them and conquer the difficulties that the conjunction of apparently heterogeneous elements lays on our imagination. Every intelligence here gives itself up to inventing a unique order, a single activity, and desires to impose its own image on the system which it imposes on itself—a clear-cut image. With a violence which depends on its range and its lucidity, it finishes by reconquering its own unity, just as by the operation of some mechanism a hypothesis becomes clear and proves itself to be the thing which has made the whole, the central revelation in which all has had to happen, the monstrous intelligence or strange animal which has woven thousands of pure connections between many forms, and of which those puzzling and varied constructions were the creations—instinct building its habitation. The production of the hypothesis is a phenomenon which admits of variations but not of chance. Its value is the value of the logical analysis of which it must be the object. It is the basis of the method with which we are going to occupy ourselves and which we are going to utilize.

I propose to imagine a man whose activities seem so distinct from each other that if I can find a unifying idea of them it may well seem more comprehensive than all other ideas. I wish him to have an abnormally lively perception of the difference between things—the adventures of such a perception could well be described as analysis. Everything interests him. It is of the universe that he thinks always. And he thinks of rigour.¹ He is so made that he misses nothing of

¹ *Hostinato rigore*, obstinate rigour. Leonardo's motto.

all that enters into the tangle of what exists—not a single shrub. He goes down into the depth of that which is for all men to see, but there he wanders away and studies himself. He learns the habits and organizations of nature, works on them from every angle. And he comes to be the only man who constructs, calculates, sets in motion. He leaves behind him churches and fortresses; he fashions ornaments—full of sweetness and strength—and a thousand machines; and he makes rigorous calculation along many unsurveyed lines. He leaves the remains of no one knows what great playthings. In these pastimes mixed up with his scientific studies—themselves constituting something not distinguishable from a passion—he has the charm of always seeming to be thinking of something else. I shall follow him through the rude unity and density of the world, where he will become so familiar with nature that, in order to keep in contact with it he will imitate it, and will finish by finding it difficult to conceive an object which is not in nature.

It remains to give a name to this creature of thought in order to set a limit to the elaboration of terms ordinarily too far apart and likely to escape from any attempt to associate them. No name seems to me more suitable than that of Leonardo da Vinci. Whoever imagines a tree to himself must also imagine a sky or a background against which to see it standing. That is logic of a kind that is almost self-evident and almost unrealized. The figure I imagine reduces himself to an inference of this nature. Little of what I say of him must be considered as applicable to the man who has made the name illustrious: I am not following up a coincidence that seems to me impossible to make clear. I am trying to express a point of view with regard to the detail of an intellectual life, to make one suggestion as to the methods which every discovery implies, one,

chosen amongst the multitude of things that may be imagined, a model, that may well be thought a rough one but in every way preferable to strings of doubtful anecdotes, to commentaries in the catalogues of art collections, to dates—erudition of that sort would only falsify the purely hypothetical aim of this essay. I am not altogether ignorant in such matters, but them, above all, I must refrain from discussing, in order not to cause confusion between a surmise as to conditions that are quite general and the outward fragments of a personality which has vanished to a point where we are given—by the fragments—the certitude of a thinking existence and equally the certitude that we can never know it better.

Many an error which distorts the judgements made on human achievements is due to a singular forgetfulness of their genesis. One forgets often that they have not always been in existence. From which has arisen a kind of reciprocal coquetry of silence on the part of artists as to the origins of their work—to the extent of too carefully hiding them even. We fear that they are humble, these origins, even that they are mere nature. And though very few artists have the courage to say how they produced their work, I believe that there are not many more who take the risk of understanding it themselves. Such understanding commences with the very difficult abandonment of the notion of glory, of the laudatory epithet; it tolerates no idea of superiority, no delusion of greatness. It leads to the discovery of the relative beneath the apparent perfection. And it is necessary if we are not to believe that minds are as profoundly different as their products make them appear. For example, certain works of science, and mathematical works in particular, show such clarity in their construction that one would say they were not the work of any person at all. There is something *unhuman* about them. And

this quality has had the effect of making people suppose so great a difference between certain studies, as, for instance, between the sciences and the arts, that, owing to it, opinion has also assumed a separation between the minds devoted to each, as complete as that which seems to exist between the results of their labours. These labours, however, only differ as variations from a common basis, differ in what of it they include and what of it they leave out in forming their languages and their symbols. One must, therefore, have some distrust of books and explanations that seem too clear. We are deceived by what is definite; and then what is made specially to be looked at changes its aspect in our eyes and takes on a nobler air. It is when working on movements which are still irresolute, unstilled, which may not yet be called either diversions or laws, works of art or theorems, movements which, when completed, lose their likeness to each other, that the operations of the mind can be of use to us.

Interiorly there is a drama. ('Drama', 'adventure', 'agitation', all words of this kind may be used, provided that they be numerous and that one is corrected by the other.) This drama, like the plays of Menander, is often lost. Nevertheless we have the manuscripts of Leonardo, the celebrated notes of Pascal. These fragments command attention. They help us to divine through what intellectual somersaults, what odd intrusion of human affairs, what repeated sensations, after what immense passages of languor, the shadows, the spectres that presage their future works, show themselves to men. It suffices, without resorting to such outstanding examples as might imply the possibility of making the mistakes that attach to the study of exceptions, to study some one who believes himself alone and abandons himself to himself, who *recoils* before an idea; grasps it; denies, smiles or shrinks back—acting, as it were, the

curious character of his own variety. It is the way madmen behave before the world.

Such examples relate definite, measurable, physical movements immediately to the personal comedy of which I spoke. The actors in this drama are mental images, and it is easy to understand that if the peculiarities of these images be eliminated, and if only their succession, frequency, periodicity, their diverse capacities for association, and, finally, their duration, be studied, one is at once tempted to find analogies in what is called the material world, to compare them with scientific analyses, to give them an environment, a continuity, properties of displacement, of speed, and then mass and energy. One comes to the conclusion that many such systems are possible, that no one of them is worth more than another, and that the use of them—which is important since it always throws light on something—ought to be at every instant under supervision and its purely verbal role kept in mind. For, in reality, analogy is only the faculty of varying the images, of combining them, of making part of one coexist with part of another and perceiving, voluntarily or otherwise, the similarities in their construction. And that renders it impossible to describe the mind which is their world. Here words lose their virtue. It is here that they are formed and spring to the mind's eye—it is the mind that describes words to us.

In this way man comes to have *visions* whose power is his power. He relates his history to them. They bind it geometrically. And from that come those decisions which surprise, the perspectives, the blinding divinations, precisions of judgement, illuminations, and also the incomprehensible anxieties, the stupidities. In certain outstanding cases one invokes abstract gods, genius and inspiration and a thousand others, and asks oneself with stupefaction how these accidents arise. And once

more one believes that something has created itself—for man adores mystery and the marvellous precisely as he likes to shut his eyes to what is going on behind the scenes at the theatre. One treats what is logical as if it were a miracle. But the ‘inspired’ author had been ready to perform his task a year before it was done, had been ripe, had been thinking of it always, perhaps without being conscious of the fact, and while others could not yet see, he had studied, arranged, and now had only read what was already in his mind. The secret—Leonardo’s as Buonaparte’s, as that which all highest intelligences possess once—is, and can only be, in the relationship that they can find—that they were forced to find—*between things whose laws of continuity escape us*. It is certain that at the decisive moment they had only to perform some definite acts. And the achievement that impressed the world, the supreme achievement, was quite a simple affair—like comparing two lengths.

This attitude makes it possible to grasp the unity of method with which we are so concerned. Here it is natural, elementary. It is life and the explanation of life. And thinkers as powerful as he of whom I think as I write these words, having mastered the resources implicit in this method, may well write at this clearer and more conscious point: *Facil cosa e farsi universale*—it is easy to make oneself universal! They can for a moment admire the prodigious instruments that they are, though the next moment they must deny anything in the nature of prodigy.

This final clarity, however, is only found after long wanderings, inevitable idolatries. The consciousness of the operations of thought, the unrecognized logic of which I have spoken, exists but rarely, even in the most powerful minds. The number of conceptions, the power to extend them, and the abundance of discoveries made, are another thing and are

produced independently of any judgement that one may make as to their nature. This judgement is, notwithstanding, of easily realized importance. A flower, a proposition, a noise, can be imagined almost simultaneously; one can make them follow each other at what distance one pleases; any of these subjects of thought can also be changed, distorted, made to lose its initial aspect following the will of the mind that holds it; but it is the knowledge of this power of the mind alone that gives the thing its value. This alone permits one to criticize such *formations*, to interpret them, to find in them only what they contain, and not to stretch them to the point of confusing their various stages with those of reality. With this knowledge commences the analysis of all intellectual phases, of all that itself will have the power to classify as folly, idolatry, discovery—hitherto mere nuances, not to be distinguished from each other. They were equivalent variations from a common substance, comparable one to the other, carelessly, as it were, finding indefinite levels, sometimes nameable but all belonging to the same category. Consciousness of the thoughts that one has, to the extent that they are thoughts, is awareness of this equality or homogeneity: the feeling that all combinations of the kind are legitimate, natural, and that the method consists in exciting them, in seeing them with precision, in searching for their implications.

At a point in this awareness or double mental life which reduces ordinary thought to something like the illusions of a waking sleeper, it seems that the sequence of these illusions, the cloud of combinations, of contrasts, of perceptions, which group themselves about some study or which float on indefinitely, at pleasure, develop with a regularity that is *perceptible*, with the evident continuity of a machine. Then emerges the idea or the wish to precipitate the movement of

this progress, to carry its terms to their *limit*, the limit of their imaginable expression—*after which all shall be changed*. And if this mode of being conscious becomes habitual, one will come to consider at once all the possible results of a contemplated act, all the implications of a conceived object, and in this way to achieve their annihilation, to achieve the faculty of divining always a thing more intense or more exact than the thing allowed, to attain the power of shaking oneself free of any thought that has lasted too long. No matter what it be, a thought that has become fixed takes on the characteristics of hypnosis and becomes, in the language of logic, an idol; in the domain of poetic construction and art a sterile monotony. The sense of which I speak, which leads the mind to foresee its own activities, to imagine the structure of what has to be imagined in detail as a whole, and the effect of the sequence thus calculated, this sense is the condition of all generalization. It is that which in certain individuals appears as a veritable passion, and with an energy that is remarkable; which, in the arts, permits of progress and explains the more and more frequent employment of concentrated terms, abridgements and violent contrasts; and it exists implicitly in its rational form as the basis of all mathematical conceptions. It is an operation very similar to it which, under the name of reasoning by recurrence,¹ extends the range of these analyses, and which, from simple addition to infinitesimal, achieves something more than merely to spare the necessity for an indefinite number of useless experiments; achieves existences more complex—for the conscious imitation of an act is a new act which comprehends all possible modifications of the first.

¹ The philosophic importance of this method of reasoning was demonstrated for the first time in a recent article by M. Poincaré. The distinguished mathematician confirmed the priority attributed to him when consulted by the author.

This picture, drama, whirl, clarity, opposes itself naturally to other movements and other stages which we call 'nature' or 'the world', things that we do not know what to do with, except distinguish ourselves from them—and then we immediately reincorporate ourselves in them.

Philosophers have generally ended by implicating our existence in this notion and it inversely in our notion of ourselves; but they rarely go farther; we know that their business is to contend against the thought of their predecessors rather than to look into it for themselves. Scientists and artists have used the notion of nature variously: scientists finishing by measuring and then constructing; artists by constructing as if they had already measured. Everything that they have made takes its place of itself in the sum of things and plays its part there, continuing things through the new shapes it gives to the materials that constitute them. But, before considering and building, one observes; the characters of the senses, their different ways of accommodation, distinguish and choose, amongst the qualities offered in the aggregate, those which are to be retained and developed by the individual. The process is at first submitted to, almost without thinking, with a feeling of letting oneself be filled, of slow circulation, as of happiness; then one begins to be interested and to give different values to things that had seemed settled, simple; one adds to them, takes more pleasure in isolated details, explains them to oneself, and what happens is as the re-emergence of an energy that the senses had absorbed; soon this distorts the aspect of things in its turn, using for the purpose the considered thought of a human being.

The universal man begins also by simple contemplation, but he always returns to be impregnated by what he sees, returns to the intoxication of the particular instinct and to the

emotion which the least of things real arouses if one keeps in mind the two, thing and instinct, in every way separate from each other and yet combining, in so many ways, so many different qualities.

The majority of people see with the intellect much more frequently than with the eyes. Instead of coloured spaces they become aware of concepts. A high, whitened, cubic form with holes filled with the glitter of glass, is at once for them a house: *the house!* a complex idea, a concurrence of abstract qualities. When they move they miss the movement of the rows of windows, the transformation of the surfaces continually changing their aspect—for the concept does not change. They see through a dictionary rather than through the retinae, they come so ill to an object, so vaguely to knowledge of the pleasures and pains of sight, that they have had to invent *beautiful views*. Of everything else they are unaware. But at the beautiful view they regale themselves on a concept swarming with verbal associations. (A general law of that weakness which exists in all domains of knowledge is precisely the choice of the viewpoint that is *obvious*; the settling down into comfortable ready-made systems that make things easier. . . . It is for this reason that the work of art may be said to be always more or less didactic.) The beautiful view itself is more or less lost on them. And all the modulations brought about by slight movement, light, weariness coming on the eyes—these do not touch them. They neither do anything with their sensations nor undo anything. They know that the line of still waters is horizontal, so they never notice that the sea *stands up* before their gaze; if the gleam of a shoulder, the tip of a nose, two fingers, are caught by chance in an isolating beam of light they never turn them into a new jewel enriching to the vision. The jewel is no more to them than the fragment

of the person, the person alone exists for them. And as they reject as nothing that which has not a name, the number of their impressions is limited in advance.¹ The use of the gift which is opposed to this blindness leads to true analysis. It cannot be said to exercise itself in *nature*—this word *nature*, which seems to be general and to contain all possibilities of experience, is, on the contrary, absolutely particular. It evokes personal images determined by the memory or history of an individual. Most frequently it calls forth a vision of the green eruption, vague and continuous, of a great elementary work opposed to what is human, of a monotonous quantity which will one day cover us, of something stronger than we are, something tangled, torn, something that sleeps, but works on, and which, personified, the poets endow with cruelty, kindness, and other motives. He who looks and is able to see well must therefore be placed in a corner—any corner—of that reality.

The observer is caught in a sphere which is never broken, where there are differences which will be movements and objects, and of which, though the surface is never broken, all the parts move and are renewed. At first the observer is no

¹ See proposition CCLXXI of the *Treatise on Painting*: '*Impossibile che una memoria possa riserbare tutti gli aspetti o mutationi d'alcun membre de qualunque animal si sia. . . . E perche ogni quantità continua è divisibile in infinito.*' (It is impossible for any memory to retain all the aspects of even one organ of any animal whatsoever. . . . Geometrical demonstration by the infinite divisibility of a continuous magnitude.)

What I have said of sight applies to the other senses. I chose it because it seems to me more spiritual than the others. Visual images predominate in the mind. It is in relation to them that the faculty of analogy is most frequently exercised. The inferior expression of this faculty which is the comparison of two objects can even have for its origin an error of judgement accompanying an indefinite sensation. The form and colour of an object are so obviously primary that they enter into the conception of it formed by one of the other senses. If one speaks of the hardness of iron, it is nearly always the visual image, rarely an auditory one, that is produced.

more than the condition of this finite space: he is this finite space each instant. No memory, no capacity, troubles him, so much is he at one with what he looks at. And in so far as I can conceive his remaining so, I can well conceive that his impressions do not differ the least bit in the world from those he receives in a dream. He comes to feel good, ill, calmness coming to him¹ from these chance forms—amongst which counts his own body. And now, slowly, these begin to be forgotten, are hardly seen any more, while others begin to be seen—to be seen there where they had been all the time. A very subtle confusion of the movements that steadiness of gaze and the consequent tiredness entail, with the changes due to ordinary movement, must be noted. Certain spaces in the area of this vision become enlarged, just as the sick member seems larger and, through the importance given to it by suffering, distorts the idea that one has of one's body. These enlarged spaces will seem easier to survey, pleasanter to the eye. It is here that the observer attains to reverie; and after this he will be able to extend to objects more and more numerous the peculiar characteristics of the first and best understood. He will perfect a given space from the memory of a preceding one. Then at his pleasure he arranges and dissects his successive impressions. He can appreciate odd combinations; he regards as one whole and solid being a bunch of flowers, or a group of men, a hand, a cheek that he isolates, a spot of light on a wall, a chance union of animals. He puts himself to the task of figuring out the invisible wholes of which he has been given the

¹ Without touching on physiological questions I may mention the case of an individual afflicted with maniacal depression whom I saw at a clinic. He was in a state of retarded life, recognizing objects with an extraordinary slowness. Sensations reached him after a long delay. He was conscious of no needs. This form of insanity, sometimes called stupidity mania, is excessively rare.

parts. He divines the planes cut by a bird in its flight, the curve followed by a stone that has been thrown, the surfaces defined by our gestures, and the extraordinary rents, the fluid arabesques, the formless chambers, created in an all-embracing network from the scratching noise of humming insects, the bending of trees, wheels, the human smile, the tides. Sometimes traces of things he imagined may appear on the sands, on the waters; sometimes his own retina itself may later on compare the form of his movements with some object.

From forms begotten of movement there is a transition towards movements which, with the help of a slight change in duration, become forms. If a thousand vibrations seem to be a continuous sound, if a drop of rain looks like a descending line, or the roughnesses of this paper appear to be one polished plane; and if the duration of the impression be the sole cause, then inversely, a stationary form may be replaced by a corresponding dynamism in the periodical transference of a carefully chosen thing or element. Mathematicians will be able to introduce time and speed into the study of forms as they can eliminate them from the study of movements; languages make a jetty *stretch*, a mountain *rise*, a statue *stand*. And the madness of analogy, the logic of continuity, transports these actions to the limit of their tendencies, beyond the possibility of stopping. For the imagination, everything moves in some degree. Here in my room, because I isolate this one thought and let it continue, objects *act* like the flame of the lamp; the armchair consumes itself in its place; the table describes its shape so swiftly that it remains motionless; the curtains hang endlessly, continuously. Here is infinite complexity; to regain one's real self across the notion of these forms, the movement of contours, the tangle of knots, the roads, the descents, the whirlwinds, the varying speeds, we must have recourse to our

great faculty for deliberate forgetfulness, and, without destroying the notion acquired, install an abstract conception, that of orders of greatness.

Thus in the aggrandisement of 'that which is given' disappears the intoxication of personal things, of which there is no science. If one has these before one for some time and thinks of them, they change; if one does not think of them one falls into a state of torpor which lasts, and which is like a tranquil dream where one stares as though hypnotized at the angle of a piece of furniture, the shadow of a leaf—and one awakens only when they are seen. Certain men are specially acutely conscious of sensuous pleasure in the *individuality* of objects. They insist with delight on this quality of uniqueness in anything—all things have it. Here is a curiosity which finds its ultimate expression in the fictitious and in the arts of the theatre, and has, at that point, been described as the *faculty of identification*.¹ Nothing is more deliberately absurd than the temerity of a person who describes himself as at one with a certain object and capable of identifying himself with its impressions. Suppose it was a material object.² Nothing in the life of the imagination is more powerful. The chosen object becomes the pivot of this life, a centre of associations that become more and more numerous according as the object is more and more complex. Fundamentally, the faculty can only be a means of exciting imaginative vitality, of transforming a potential energy into an actual, until it becomes a pathological characteristic and dominates horribly the growing stupidity of a disappearing intelligence. From the mere observation of things to these states the mind does no more than enlarge its

¹ Edgar Poe, 'On Shakespeare'. (*Marginalia*.)

² If one could explain why identification with a material object seems more absurd than with a living object, one would have advanced a step in this matter.

functions, create ideas relating to the problems which arise from all sensations, and which it resolves more or less easily according as the demand for further production is more or less insistent. It is evident that here we touch on the practice of thought. Thought consists, during most of the time that we give to it, in wandering amongst themes of which we know, more than anything else, that they are already more or less familiar. Things can therefore be classified according to the facility or difficulty that they offer to our understanding and the diverse resistance to the attempts of our imagination to regard the conditions of their existence and their accidents together. It remains to make a surmise as to the history of this gradation of complexity.

The world is irregularly scattered with regular forms. Crystals are an example; so are flowers, leaves, stripe decorations, spots on furs, on wings, on animals' shells; the traces of wind on the sands and the waters. Sometimes these effects depend on some changing perspective or grouping. Distance can produce them or alter them. The times may show them or hide them. Thus the number of deaths, births, crimes, and accidents shows a regularity in variation which becomes more evident as one follows the record over a greater number of years. Events that seem most surprising and most asymmetrical when related to the flow of circumstances about them, return to a semblance of order when considered in relation to longer epochs. One might add to these examples those of instincts, habits and manners, and even that apparent periodicity which has given rise to so many systems of historical philosophy.

Knowledge of regular combinations belongs to the different sciences, and when it cannot be established through them, then to the calculation of probabilities. For our purpose we

need only remember the remark made at the beginning of the last paragraph: regular combinations, whether of time or of space, are irregularly distributed over our field of investigation. From the standpoint of mind they appear to be opposed to a quantity of formless things.

I think they might be described as 'the first guides of the human mind', if only such a proposition were not so immediately convertible into other terms. In any case they represent *continuity*.¹ An idea permits of a change or transfer (of attention, for instance) between elements assumed to be in a fixed relation to it and which it selects from memory or from actual perception. If these elements are quite similar, or if the difference between them reduces itself to a question of mere distance, to the elementary fact of their separateness from each other, then the *work* to be done consists only in this notion of differentiation. Thus a straight line will be the easiest of all lines to conceive, for there is no slighter effort for thought than that made in passing from one of its points to another, each of them being similarly placed with regard to all the others. In other words, all its parts are so homogeneous, however short we may imagine them to be, that they reduce themselves to one, always the same; and it is for this reason that one always reduces the dimensions of figures to straight lines. At a higher stage of complexity it is periodicity that one calls upon to represent continuous qualities, for this periodicity, whether it occurs in time or in space, is nothing other than the division of an object of thought into such fragments as under certain

¹ The word is not here used in its mathematical sense. It does not mean the insertion in an *interval* of a numerable and innumerable infinity of values; it simply means the simple intuition of objects that set one thinking of laws, of laws that are perceptible to the eye. The existence or the possibility of such things is the first *fact* of this rule and not the least astonishing.

definite conditions may be replaced by each other—or by the multiplication of the object under the same conditions.

Why is it that of all that exists only a part can be thus reduced? There comes a moment when the figure becomes so complex or the occurrence appears so new that one must renounce both the effort to grasp it as a whole and the pursuit of its translation into continuous values. At what point have the Euclids halted in the comprehension of forms? At what stage amongst the obstacles to figured continuity have they stumbled? This is the final point of a study in which one cannot help feeling tempted by the doctrines of evolution. One does not wish to admit that this limit may be definitive.

What is certain is that all speculation has for basis and for end the extension of continuity by the aid of metaphors, abstractions, and forms of speech. The arts use them in a fashion of which we shall shortly speak.

We come to represent the world to ourselves as being reducible here and there to intelligible elements. Sometimes we can do this through the senses, at other times the most ingenious systems have to be employed. But voids remain. Our attempts do not cover all the ground. And this is where our hero takes possession of his kingdom. He has an extraordinary sense of symmetry which sets everything before him as a problem. At each gap in understanding his mental activity appears. One sees how useful he can be. He is like a hypothesis in physics. It would be necessary to invent him if he did not exist. But he does exist. And now the universal man may be imagined. A Leonardo da Vinci may, as a notion, exist in our minds without our being too bewildered. We may dream over his powers without losing ourselves too quickly in the fog of words and the pretentious epithets that are so

favourable to inconsistency of thought. Could one possibly believe that such mirages would satisfy him?

That *symbolic* mind held the most enormous collection of forms, a storehouse, as it were, of attitudes of nature, always bright, a potentiality always immediate and which increased with the extension of its domain. It was constituted of a host of images, of possible memories, of the capacity to recognize in the compass of the world an extraordinary number of things and to arrange them in a thousand ways. Leonardo is master of faces, anatomies, machines. He knows how a smile is brought about: knows how to introduce it into the façade of a house or the lines of a garden; he can intermingle or straighten out channels of water, tongues of flame. If his hand sketch the vicissitudes of the attacks that he has planned, the trajectories of thousands of bullets wiping out the defences of cities—which he has scarcely taken the trouble to construct or fortify in full detail—are described as though the bullets were frightful bouquets. He adores battles, tempests, floods, as if, in tranquillity, the variations in things seemed to him to be too slow. He has risen to seeing them as vaster mechanisms, to sensing them in the apparent independence or life of their fragments: in a handful of sand dissipated by a breath of wind, in the wandering idea of each soldier writhing in passion and exquisite pain.¹ He identifies himself with the ‘timid and brusque’ bodies of children; he knows the constraint in the gestures of the old and of women, the simplicity of a corpse. He possesses the secret of composing fantastic beings and can make either their existence seem probable or the logic which harmonizes their parts so rigorous that it suggests life and

¹ See the description of the Deluge, etc., in the *Treatise on Painting*, and in the manuscripts at the Institute of France. (Ed. Ravaisson-Mollien.) In the Windsor manuscripts are the drawings of tempests, bombardments, etc.

naturalness in the whole. He creates a Christ, an angel, a monster, by putting what is already known, what is everywhere, into a new order, profiting by the illusion and abstraction of painting, which, producing only one aspect of things, evokes all.

He leaves the movement (sometimes precipitate, sometimes apparently slow) of landslides or of falling rocks, leaves massive curves, as it were, to turn to those of voluminous draperies; turns then from smoke rising above roofs to distant bosage, to beeches gleaming on the horizon; turns from fishes to birds; from the glitter of the sun on the sea to the thousand fine reflections on the leaves of a birch-tree; from the scales of a fish to the flash of wavelets in a gulf; from ears and curls to the frozen whorls of shells. He passes from the shell to the roll of the swelling waves, from the surface of the small pool to the channels leading to and from it, and from these to elementary crawling movements, to liquid serpents. He vivifies. In his drawings the water about a swimmer seems like scarves, draperies that reveal the effort of the muscles.¹ He makes the air behind the flight of larks seem like silken fragments of shadow, like the gleam of bubbles burst by the winged passage, by the delicate breathing, leaving across the blue-tinted leaves of space the thickness of the vague crystal of space itself.

He reconstructs all buildings; he is attracted by all methods of handling the most diverse materials. He rejoices in things distributed through the different dimensions of space: vaultings, beams, spreading domes; galleries and loggias in rows; masses held in the air by means of arches; springs of bridges; depths of the foliage of trees merging into the atmosphere which the foliage absorbs; the composition of the migratory

¹ Sketch in the manuscripts of the Institute of France.

flight, the acute triangle with its apex towards the south indicating a rational association of living beings.

He plays with things, he grows bolder, he translates all his feelings into this universal language, translates clearly. His wealth of metaphor is so great as to permit of it. His craving not to leave anything unexamined that contains the slightest fragment, the least splinter in the world, renews his strength and the cohesion of his life. His pleasure realizes itself in the decorations for fêtes, in inventions that are charming, and when he dreams of constructing a flying man he sees him as rising to seek for snow at the tops of the mountains and coming back to sprinkle it on the pavements of towns vibrating with summer heat. Feeling escapes in his delight in pure faces twisted into a half-hidden pout, in the gesture of a god become silent. His hatred knows the use of every weapon, every trick of engineering, every subtlety in strategy. He sets up formidable engines of war, protecting them by bastions, caponiers, salients, moats provided with sluice-gates by means of which the prospects of a siege may be suddenly transformed; and I recall, sensing here the beautiful Italian wariness of the sixteenth century, that he built donjons, with, about the same axis, four independent flights of stairs, which separated hirelings from their masters and different companies of mercenary soldiers from each other.

He adores the body, man's body and woman's, the human body which measures itself against all things. He estimates its height in terms of a rose reaching to its lips, of a plane-tree which, though twenty times higher than it, has foliage drooping down to the curls on its head; he knows that its radiance will fill a great room or the depths of a vault—the form of which is determined by bodily necessities—will fill, too, some place in nature which sets a limit to man's steps. He watches

for the light footfall descending, for the silent skeleton beneath the flesh, for the play of movement in walking and for the play of heat and cold on nakedness, for the diffused bronze or pallor caused by the mechanism. And he is obsessed by the face, that illuminated and illuminating thing, the most intimate of visible things and the most magnetic, the most difficult thing to look at for its own sake. In the memory of each man some hundreds of faces and their different aspects live vaguely. In his they are classified and follow each other symmetrically from one physiognomy to the next, from one irony to another, from wisdom to lesser wisdom, from benevolence to divinity. About the eyes—fixed points of variable brilliance—he makes play with and brings out so that it reveals everything, the mask whose complex architecture and distinct motor activities are combined under the smooth skin.

Amongst the multitude of human minds this mind seems like one of those *regular combinations* which we have been considering: unlike most others it does not seem to need to be related to a nation or a tradition or a group of men practising the same art in order to be understood. The number of its works and the relationships between them alone make a symmetrical object of it, a sort of *complete-in-itself system*, or at least a system which renders itself so incessantly.

He is so made as to be the despair of the modern man, side-tracked from adolescence into some special line where it is thought that he ought to excel because of being limited to it; variety of methods, sum of details, continual addition of facts and theories are recalled only to confound the patient observer, the meticulous accountant of things that are, the individual who reduces himself—not without merit, if that word have any meaning—to the trivial workings of an instrument,

with him for whom this work is done, the poet of the hypothesis, the organizer of the materials of analysis. To the first, patience, a monotonous road, specialization, and all time. Absence of thought is his quality. But the other must move across boundaries and barriers. It is his function to violate them. I would suggest that there is an analogy between specialization and those states of stupor caused by prolonged sensation to which I referred earlier. But the best argument is that nine times out of ten great innovation in an order is brought about by the introduction of methods and ideas which have not been foreseen there; and having just attributed such progress first to the formation of images and then to the formation of languages, we cannot avoid the conclusion that the number of such languages possessed by a man influences profoundly his chances of making new discoveries. It would be easy to show that all the minds that have provided generations of true seekers (and mere talkers as well) with material, all whose remains have for centuries nourished human opinion (and the passion to echo human opinion), were more or less universal. The names of Aristotle, Descartes, Leibniz, Kant, Diderot, suffice to demonstrate it.

And now we touch on the question of pleasure in *construction*. We shall try to justify the views enunciated by giving some examples and to prove by application the possibility of, almost the necessity for, a general interplay of thought. I should like it to be realized how difficult it would be to obtain the particular results that disclose themselves without employing numerous apparently unrelated concepts.

He who has never completed—be it but in dream—the sketch for some project that he is free to abandon; who has never felt the sense of adventure in working on some composition which he knows finished when others only see it

commencing; who has not known the enthusiasm that burns away a minute of his very self; or the poison of conception, the scruple, the cold breath of objection coming from within; and the struggle with alternative ideas when the strongest and most universal should naturally triumph over both what is normal and what is novel; he who has not seen the image on the whiteness of his paper distorted by other possible images, by his regret for all the images that will not be chosen; or seen in limpid air a building that is not there; he who is not haunted by fear of the giddiness caused by the receding of the goal before him; by anxiety as to means; by foreknowledge of delays and despairs, calculation of progressive phases, reasoning about the future—even about things that should not, when the time comes, be reasoned about—that man does not know either—and it does not matter how much he knows besides—the riches and resources, the domains of the spirit, that are illuminated by the conscious act of *construction*. The gods have received from the human mind the gift of the power to create because that mind, being cyclical and abstract, may aggrandize what it has imagined to such a point that it is no longer capable of imagining it.

Construction exists between a project or an image deliberated on and the materials that one has chosen. One order is substituted for some other that was the initial one, whatever the objects arranged may be. Be they stones, colours, words, concepts, men or anything else, their particular nature does not change the general conditions of that species of music in which—if one may pursue the metaphor—it does no more than determine the timbre. The surprising thing is that one sometimes gets an impression of poise and consistency in human constructions made with an agglomeration of apparently irreconcilable materials, as if he who had arranged them had

known that they had secret affinities. But astonishment passes all bounds when one realizes that the author himself, in the vast majority of cases, is unable to give any account of the lines he has followed, that he is the wielder of a power the nature of which he does not understand. He can never make sure of success beforehand. By what calculations do the parts of an edifice, the elements of a play, the factors in a victory, fall into their places with regard to each other? Through what series of dark analyses is the production of a work brought about?

In such cases it is usual to explain everything by reference to instinct. But it is not too clear what instinct itself is, and besides, in this case, one would have to have recourse to rigorously personal and exceptional instincts, that is to say to a contradictory notion of 'hereditary habit'—which would no more be habitual than it is hereditary.

Construction, from the moment that the effort involved attains to some comprehensible result, ought to set us thinking of a common measure of the terms used, an element or principle, however, that the simple fact of consciousness already supposes and which could have none but an abstract or imaginary existence. We cannot represent to ourselves a whole that is made of changes, a single edifice of multiple qualities, except as common ground between different forms of some single material or law, the hidden continuity of which we affirm at the same instant that we recognize the edifice as a unity, as the enclosed domain of our investigations. Here again is that psychical postulate which in our consciousness resembles the principle of inertia in mechanics. Purely abstract, purely differential combinations alone, those of numbers, for instance, may be constructed by means of fixed unities; we should note that these are in the same relationship

to other possible constructions as measured parts of the world to those which are not measured.

In art there is a word which applies to all styles and all fancies, and at one stroke dismisses all the pretended difficulties with regard to the opposition or the relationship between art and that 'nature' which, for good reasons, is never defined: the word is *ornament*. Let us recall the series of curves, the coinciding divisions with which the most antique objects known are covered: the profiles on vases and temples; the lozenges, spirals, ovals, striæ of the ancients; the crystalline forms and the sensuous beauty of Arab wall-decoration; the bony shapes and the symmetry of Gothic art; the waves, the fires, the flowers on Japanese bronze and lacquer; and, in each of these schools, the introduction of representations of plants, beasts and men, and the perfection of these representations of plants, beasts and men, in painting and sculpture. Let us, considering language, recall its primitive melody, the separation of words from music, the flowering of each, the invention of verbs, of writing, the dawning possibility of the *figurative* complexity of phrases, the strange introduction of abstract words; and on the other hand, the system of sounds becoming more flexible, extending beyond the voice to include the resonance of materials, deepening with the discovery of harmonies, varying with the utilization of different pitches. And let us finally, then, observe the parallel progress of the formations of thought across the species of psychical onomatopœia of the primitives, and elementary symmetries and contrasts, to the ideas of substances, to metaphors, the faltering beginnings of logic, formalisms, entities, metaphysical existences.

All this multiform activity may be appreciated from the point of view of ornament. The instances enumerated may be considered as finite parts of space and time containing different

variations, which are sometimes known, and characterized objects, but of which the ordinary and significant uses are neglected, so that only their order and mutual reactions may subsist. On the order depends the effect. The effect is the ornamental aim, and the work thus takes on the character of a mechanism created to impress a public, to arouse emotions and their corresponding images.

Regarded thus, the ornamental conception is to the individual arts what mathematics is to the other sciences. In the same way that the physical notions of time, length, density, mass, are only homogeneous quantities in calculations, and recover their individuality only in the interpretation of results, so the objects chosen and arranged with a view to a particular effect seem as if disengaged from most of their properties and only reassume them in the effect, in, that is to say, the mind of the detached spectator. It is thus by means of an abstraction that the work of art can be constructed, and this abstraction is more or less active, and is more or less easy to define according as the elements borrowed from reality for it are more or less complex. Inversely it is by a sort of induction, by the production of mental images, that all works of art are appreciated, and this production must equally be more or less active, more or less tiring, according as it is set in motion by a simple interlacing on a vase or a broken phrase by Pascal.

The painter disposes coloured pigments on a plane and he must use their lines of separation, thicknesses, harmonies and contrasts to express himself. The spectator only sees a more or less faithful representation of flesh, gesture, landscape, things he might see through the window of a museum. The picture is judged in the same way as reality. One person will complain of the ugliness of the face, others will fall in love with it; some indulge in the most verbose kind of psychological analysis;

others only look at the hands, which they always think look 'unfinished'. The truth is that it is taken for granted that the picture should reproduce the physical and natural conditions of our environment. Volume must be weighty and light must shine in the way we know, and gradually anatomy and perspective take a supreme place in pictorial æsthetic. I believe, notwithstanding, that the surest method of judging a picture is to begin by identifying nothing and then to proceed step by step to make the series of inductions that is necessitated by the presence at the same moment of a number of coloured spots within a given area in order to rise from metaphor to metaphor, from supposition to supposition, to a knowledge of the subject—sometimes only to a consciousness of pleasure—that one has not always had to begin with.

I do not think that one could give a more amusing example of the general attitude with regard to painting than the fame of that 'La Gioconda smile', to which the epithet 'mysterious' seems to be irrevocably attached. That line on a face has had the fortune to produce the sort of phrase-making that 'sensations' or 'impressions' with regard to art have legitimized in all languages. It is shrouded behind a mass of words and disappears amongst the many paragraphs that begin by calling it 'disturbing' and finish with a description of *soul*—generally vague. It would justify less intoxicating studies. They were no inaccurate observations or arbitrary symbols that Leonardo utilized, or *La Gioconda* would never have been painted. He was guided by a perpetual sagacity.

In the background of *The Last Supper* there are three windows. The one in the middle, which opens behind Jesus, is distinguished from the others by a cornice that describes an arc of a circle. If we continue this curve we get a circumference of which the Christ is the centre. All the main lines of

the fresco converge at this point, the symmetry of the composition is relative to this centre and to the long line of the supper-table. The mystery, if there be one, is to learn why we consider such combinations mysterious. And it can, I fear, be explained.

It is not from painting, nevertheless, that we shall choose the salient example we need in order to study the intercommunications between different activities of the mind. The host of suggestions emanating from the necessity to give diversity to, to people, a surface, the resemblance between the first efforts of this order and certain natural phenomena, the evolution of sensibility in the retina, these will be disregarded here so as not to lead the reader towards too arid speculation. A vaster art, the ancestor, as it might be, of painting, will serve our purpose better.

The word *construction*, which I employed deliberately to indicate more definitely the problem of human intervention in the things of the world and to give the mind of the reader an orientation, a material suggestion, in the direction of the logic of the subject, is now to be used in its more restricted sense. We shall consider architecture.

The building which composes the city—which is practically the whole of civilization—is a thing so complex that our understanding of it discerns, successively, first a changing decorative scheme that blends with the sky; then a rich texture of motives following the vertical, horizontal, and receding lines and varying infinitely with different perspectives; then a thing that is solid, bold, resisting, that has the characteristics of an animal; subordination of the parts to the whole; and finally it is a machine, the operating principle of which is gravity, which takes us from notions of geometry to ideas on dynamics and to the most delicate speculations on the subject of molecular

physics—of which science it suggests the theories and the models made by physicists to represent molecular structure. It is through the building—or rather amongst imaginary scaffoldings set up in order to harmonize its qualities with each other—the purpose it is to serve with its stability; its proportions with its situation; its form with its material; and the harmonizing of each of these qualities with itself, of its thousands of aspects amongst themselves, of its balances amongst themselves, of its three dimensions amongst themselves—that we can best realize the clarity of a Leonardesque intelligence. The intelligence can play with the conception of the future sensations of the man who will make the circuit of the edifice, draw near to it, appear at a window; following the weight of the coping along the walls and down the arches to the foundation it can imagine what he will see; it can feel the thrust and counterthrust of the beams and the vibrating wind that assails them; can note the forms of the play of free light over tile and cornice, and the diffusion of the light caught in a room where the sun merely shines on part of the floor. It will experiment with and judge the weight of the lintel on its supports, the fitness of the arches, the difficulties of the vaulting, the thrust of the steps thrown upward from their landings; and all the invention that realizes itself in this durable, decorated, defended mass, limpid with glass, made for our use, which will contain our words, from which our smoke will escape.

Architecture is not, as a rule, comprehended. We regard it variously, now thinking of the decoration of a theatre, now of a tenement house. I suggest that one should relate it to the idea of the city in order to appreciate it more generally, and that to grasp its complex charm one should try to recall the infinity of its aspects—a motionless building is the exception—the pleasure is in changing one's position until the building

moves, and in the enjoyment of all the combinations of its varying members—the column turns, the depths recede, the galleries glide—a thousand visions emerge from the building, a thousand harmonies.

(Many designs for a church that was never built are to be met with in the manuscripts of Leonardo. It is generally imagined that they were for a St. Peter's, Rome. They make one regret the St. Peter's of Michelangelo. Leonardo, at the end of the ogival period, at a time when antique works of art were beginning to come to light, rediscovered, between antique and Gothic, the grandeur of Byzantine design—of the raising of a cupola on other cupolas, of a roof of swelling domes clustering about a higher dome—but with a boldness and a purity of ornamentation that the architects of Justinian never knew.)

The stone being exists in space—what we call space is relative to the conception of any buildings we choose to take; the architectural edifice interprets space and leads us to hypotheses on the nature of space in a very particular manner, for it is at one and the same time an equilibrium of materials related to gravitation, a static visible arrangement, and, in each material, another equilibrium, molecular and ill-understood. He who designs a building imagines first the mass and then penetrates into the obscure realm of atoms. He tackles the problem of construction: of learning what combinations must be imagined to satisfy the conditions of resistance, elasticity, and so on, worked out in a given space. We see the logical extension of the subject; how from the purely architectural domain, which is so generally left to the professional architects, one passes to the most profound questions of mechanics and of physics in general.

Thanks to the docility of the imagination, the properties of

an edifice, and those that inhere in any other substance whatever, throw light one on another. Space, when we try to imagine it, soon ceases to be empty, becomes filled with a crowd of arbitrary structures and can, in all cases, be replaced by a juxtaposition of forms which we can imagine as small as we think necessary. A building—we may imagine it as complex as we like—multiplied, and proportionately diminished, will then represent the elements of an environment, the properties of which will depend on those of the elements. We thus find ourselves amongst, moving amongst, a number of structures. If one notices how, about oneself, space is occupied by such different things, how, that is to say, it is formed, conceived; and if one attempts to comprehend the conditions, what the various things, stuffs, minerals, liquids, smokes, imply if they are really perceived with their individual characteristics, then one will gain a clear idea on the matter only by expanding a particle of one of these things and imposing on it an edifice such that its simple multiplication will produce a structure having the same properties as that which is under consideration. With the help of these conceptions we can circulate without interruption between the apparently so distinct domains of the artist and the scholar, from the most purely poetic and even the most fantastically unreal constructions to those which are tangible and ponderable. The problems of composition are reciprocal with the problems of analysis; and the abandonment of over simple concepts with regard to the constitution of matter is a psychological victory of our time not less than the abandonment of similarly simple concepts with regard to the formation of ideas. Substantialist reveries, as well as dogmatic explanations, disappear and the capacity for forming hypotheses, names, models, liberates itself from preconceived theory and the idol of simplicity.

I have just indicated with a brevity for which some readers will feel thankful and others hold me excused, an evolution which seems to me to be important. It could not be better exemplified than by taking from the writings of Leonardo himself a sentence of which one might say that each of its terms has been so complicated and purified that it has become a fundamental notion of the modern knowledge of the world. 'The air', he says, 'is filled with an infinite number of straight and radiating lines, crossed and intercrossed, and never one of them coinciding with another, and for each object they represent the true FORM of their own reason (of their explanation).'¹ (*L'aria e piena d' infinite linie rette e radiose insieme intersegate e intessute senza ochupatione luna dell'altra rapresentano aqualunche obietto la vera forma della lor chagione.*) (Man. A. fol. 2.) This sentence would seem to contain the first germ of the theory of luminous waves, particularly if related to other remarks on the same subject.¹ It suggests the idea of the skeleton of a system of waves of which all the lines mark directions of propagation. But I attach little importance to that kind of scientific prophecy. It is always suspect. Too many people think that the ancients discovered all things. And besides, a theory is only justified by its logical and experimental developments. Here we possess only *affirmations*, the intuitive origin of which is the observation of rays, of sound, of water, of waves. The interest of the quotation is in its form, which gives us authentic light on a method, the method which I have been considering throughout this study. Here, the explanation does not *yet* assume the character of a measurement. It consists only in the throwing of one image—of one concrete mental relationship—amongst

¹ See Manuscript A, *Siccome la pietra gittata nell' acqua*, etc.; see also the curious and lively *Histoire des Sciences mathématiques*, by G. Libri, and the *Essai sur les ouvrages mathématiques* (of Leonardo), by J. B. Venturi, Paris, An. V. (1797).

phenomena, amongst the images of phenomena, let us say, in order to be rigorous. Leonardo seems to have had knowledge of this kind of psychical experimentation, and it seems to me that during the three centuries after his death the method was recognized by nobody, though every one used it—of necessity. I believe also—perhaps it is going too far—that the famous and secular question of ether and void can be related to this *logic of the imagination*, whether it be a conscious or an unconscious thing. Action at a distance is an unimaginable thing. It is by an abstraction that we realize it. In our mind only an abstraction *potest facere saltus*. Newton himself, who gave their analytic form to actions at a distance, was aware of their inadequacy from the point of view of explanation. It was reserved for Faraday to rediscover the method of Leonardo as applied to physical science. Following the distinguished mathematical work of Lagrange, d'Alembert, Laplace, Ampère and many others, he introduced conceptions of admirable boldness, which were literally only the prolongation, through the imagination, of observed phenomena; and his imagination was so remarkably lucid 'that his ideas could be expressed in ordinary mathematical form and compared with those of professed mathematicians'.¹ The *regular combinations* formed by the filings about the poles of a magnet were, to him also, the models of the transmission of the earlier 'actions at a distance'. He, too, *visualized* systems of lines uniting all bodies, filling all space, in order to *explain* phenomena of electricity and even gravitation; these lines of power we may appreciate here as those of least resistance to understanding. Faraday was not a mathematician, but he differed from mathematicians only in the expression of his thought, in the absence of symbols from his analysis.

¹ Clerk-Maxwell, preface to *Treatise on Electricity and Magnetism*. Seligmann-lui.

'Faraday, with the eyes of his mind, saw lines of power traversing all space where the mathematicians saw centres of force attracting at a distance. Faraday saw a centre where they saw only distance.'¹ Following Faraday, a new period opened for physical science, and when J. Clerk-Maxwell had translated the ideas of his master into the language of mathematics, scientific imaginations became filled with similar dominating visions. The study of the centre that he had formed, the seat of electric action and of intermolecular relation, remains the principal occupation of modern physics. Greater and greater precision demanded in the outlining of the modes of energy, the will to see and what one might call the kinetic mania, have produced hypothetical constructions of immense logical and psychological interest. With Lord Kelvin, for instance, the need to explain the most subtle natural actions by mental relationships, pushed as far as material realizations, is so great that all explanation, it seemed to him, ought to culminate in mechanical models. A mind like his substitutes for the inert, finite and old-fashioned atom of Boscovitch and the physicists of the commencement of the (nineteenth) century, a mechanism that is already extraordinarily complex, caught in the web of the ether, which, itself, becomes so perfected a structure as to satisfy the very diverse conditions that it has to fulfil. It was a mind that had to make no effort to pass from crystalline architecture to architecture of stone or iron; he rediscovers in our viaducts, in the symmetries of joists and cross-bars, the symmetries of resistance that gypsum and quartz offer to compression, to cleavage—or, in another way, to the trajectory of the luminous wave.

Such men seem to us to have had intuitive knowledge of the methods that we have indicated; we permit ourselves even to

¹ Clerk-Maxwell.

extend those methods farther than the realm of physical science; we believe that it would be neither absurd nor altogether impossible to wish to create a model for the continuation of the intellectual activities of a Leonardo da Vinci, or of any other given mind, by analysis of the conditions needing to be fulfilled. . . .

Artists and art lovers who have turned these pages in the hope of recapturing some of the impressions gathered at the Louvre, in Florence or in Milan, must forgive me for the deception they have suffered. Yet, in spite of appearances, I do not believe that I have wandered far from their favourite occupation. I think, on the contrary, that I have touched on something that is of capital importance for them—the problem of composition. I shall surprise many, no doubt, when I say that such difficulties relating to effect are generally approached and solved by means of notions and words extraordinarily obscure and involving a thousand stumbling-blocks. More than one man passes his time changing his definition of beauty, of life, of *mystery*. But ten minutes of simple attention paid to oneself should suffice to deal with these *idola specus* and to recognize the inconsistency of attaching an abstract noun, always empty, to an image that is always not only personal, but rigorously personal. Similarly, the despair of artists is most frequently due to the difficulty or the impossibility even of rendering an image by means of art. It seems to them to become discoloured or faded when imprisoned in a phrase, on a canvas, in a stave, but a few more minutes of *consciousness* might well be given to establishing the fact that it is hopeless illusion to think that one can produce in the minds of others the fantasies of one's own mind. Indeed, the attempt is almost unintelligible. What is called *realization* is, veritably, a problem of production, into which enters, in no degree whatever, the private meaning, the

key that every author attributes to his materials, but only the nature of these materials and the mind of the public. Edgar Poe, who, in this century of troubled literature, was the lightning amidst the confusion and storm of poetry, and in whom analysis sometimes ends, as with Leonardo, in mysterious smiles, has clearly established, on the basis of psychology and on the probability of effect, the author's method of approach to his reader. From this point of view all displacement of elements made to be perceived and judged depends on certain general laws and a particular application defined in advance for the category of known minds specially addressed; and the work of art becomes a machine designed to awaken and to combine the individual formations of these minds. I can imagine the indignation that such a suggestion, far removed from the ordinary idea of the sublime, may arouse; but the indignation itself will be a good proof of the theory I advance—and without, in addition, this essay being, in any sense of the word, itself a work of art.

I see Leonardo da Vinci carrying mechanism, which he called the paradise of the sciences, deeper still with the same natural power that he bestowed on the invention of pure faces in *chiaroscuro*. And the same luminous place with these docile, not impossible, people is the scene of those activities which slowed down into distinct works. He found no different passions there: on the last page of the slim notebook, all scored with his secret writings and adventurous calculations, in which he gropes towards his dearest quest, aviation, he cries—thundering against the imperfection of his labour, throwing light on the fact of his own patience, and on the obstacles in his way from the centre of the supreme spiritual view to which he had attained, and with obstinate certainty: 'The great bird will take its first flight mounted on a great swan; and filling

the universe with stupor; filling all writings with its glory; praise eternal to the nest in which it was born.' (*Piglierà il primo volo il grande uccello sopra del dosso del suo magnio cecero e impiendo l' universo di stupore, empiendo de sua fama tutte le scritture e grogia eterna al nido dove nacque.*)

MILLS COLLEGE LIBRARY

THIS BOOK DUE ON THE LAST DATE
STAMPED BELOW

Books not returned on time are subject to a fine
of 10c per volume per day.

MAR 27 1945

FACULTY

MAY 22 1950

JUN 1 1950

FACULTY

MAR 16 1955

OCT 14 1955

JUN 1 '57

JAN 7 '58

JAN 21 '58

FACULTY

8961 Y I 138

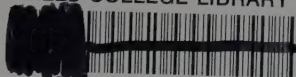
FEB 20 '63

MAY 11 '73

RES 20 '88

MAY 07 1997

650
1.75
MILLS COLLEGE LIBRARY



3 3086 00344 5673

759.5

ART DEPARTMENT

82090 L581v

